

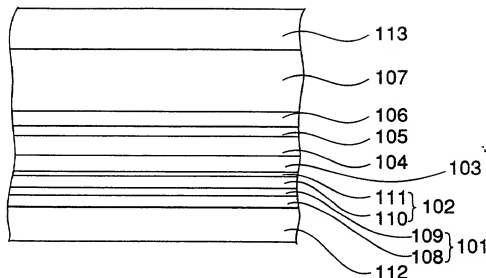
Thickness of Pin Layer in Terms of Saturated Magnetic 1T(NiFe) [nm]

In Case of Synthetic Structure tm(pin 1) - tm(pin 2)
 (in terms of NiFe) [nm]

RANGE OF THICKNESS OF NON-MAGNETIC HIGH CONDUCTIVE LAYER
 AND OF THICKNESS OF PIN LAYER OF THE INVENTION

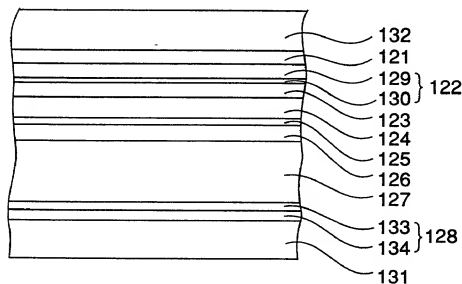
Fig.4

Fig.5



EMBODIMENT IN TOP TYPE

Fig.6



EMBODIMENT IN BOTTOM P TYPE

Fig.7A

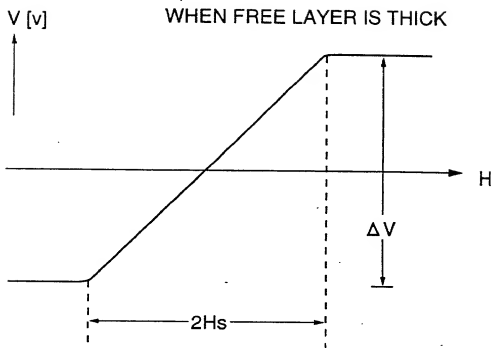
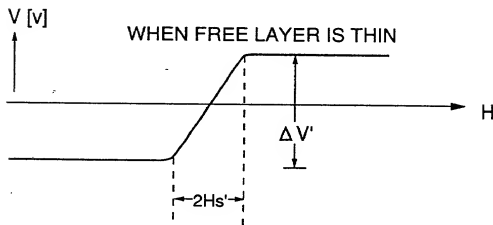


Fig.7B



PROBLEMS WHEN FREE LAYER IS THIN:

- $H_{s'} < H_s$ (Inclination becomes sharp)
 - Hard to adjust bias point
- $\Delta V' < \Delta V$ (HR ratio decreases)
 - Cannot produce output signal